Risk Factors for Pandemic (H1N1) 2009 Seroconversion among Adults, Singapore, 2009

Technical Appendix

Technical Appendix Table 1. Baseline measures of social contact and interaction in a cohort of 828 community-dwelling adults participating in a study of risk for pandemic (H1N1) 2009. Singapore, 2009

Measure no. (%), n = 98 no. (%), n = 629 HR* (95% CI)† p value‡ Use of public transport in preceding 14 d 16 (11.2) 127 (88.8) 1.00 Once or twice 10 (9.4) 96 (90.6) 0.80 (0.31-2.04) 0.631 Several times 27 (14.3) 162 (85.7) 1.39 (0.70-2.78) 0.385 Daily or almost daily 45 (15.6) 244 (84.4) 1.55 (0.81-2.94) 0.222 Use of public transport in preceding 14 d, dichotomized Never/once or twice, i.e., seldom 72 (15.1) 406 (84.9) 1.00 Several times/daily or almost daily, i.e., frequent 26 (10.4) 223 (89.6) 1.61 (0.96-2.70) 0.106 Visits to mass entertainment venues in preceding 14 d Never 70 (12.4) 496 (87.6) 1.00 0.29-3.59) 0.675 Once or twice 24 (17.7) 112 (82.4) 1.44 (0.86-2.40) 0.213 3.00 0.20-2.2 0.493 0.40 0.00 0.00-2.2 0.675 0.675 0.615 0.20 0.10 0.00 0.00-2.2 0.675 0.675 0.681 0.00 0.00	participating in a study of risk for pandemic (HTNT) 2009, S	Seroconverted,	Did not seroconvert,		Mean			
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Visits to restaurants/hawker centers/bars and clubs in preceding 14 d Never 18 (10.1) 160 (89.9) 1.00 Once or twice 24 (13.7) 151 (86.3) 1.01 (0.52–1.96) 0.818 Several times 39 (17.1) 189 (82.9) 1.38 (0.77–2.47) 0.320 Daily or almost daily 17 (11.6) 129 (88.4) 0.85 (0.42–1.73) 0.664 Visits to social gatherings with ≥10 persons in preceding 14 d Never 69 (14.9) 393 (85.1) 1.00 Once or twice 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Several times	18 (19.2)	76 (80.9)	1.30 (0.69–2.43)	0.452			
Never 18 (10.1) 160 (89.9) 1.00 Once or twice 24 (13.7) 151 (86.3) 1.01 (0.52–1.96) 0.818 Several times 39 (17.1) 189 (82.9) 1.38 (0.77–2.47) 0.320 Daily or almost daily 17 (11.6) 129 (88.4) 0.85 (0.42–1.73) 0.664 Visits to social gatherings with ≥10 persons in preceding 14 d 69 (14.9) 393 (85.1) 1.00 Never 69 (14.9) 393 (85.1) 1.00 Once or twice 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Daily or almost daily	4 (11.8)	30 (88.2)	0.80 (0.25-2.58)	0.706			
Once or twice 24 (13.7) 151 (86.3) 1.01 (0.52–1.96) 0.818 Several times 39 (17.1) 189 (82.9) 1.38 (0.77–2.47) 0.320 Daily or almost daily 17 (11.6) 129 (88.4) 0.85 (0.42–1.73) 0.664 Visits to social gatherings with ≥10 persons in preceding 14 d 8 1.00	Visits to restaurants/hawker centers/bars and clubs in preceding 14 d							
Several times 39 (17.1) 189 (82.9) 1.38 (0.77–2.47) 0.320 Daily or almost daily 17 (11.6) 129 (88.4) 0.85 (0.42–1.73) 0.664 Visits to social gatherings with ≥10 persons in preceding 14 d 89 (14.9) 393 (85.1) 1.00 Once or twice 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Never	18 (10.1)	160 (89.9)	1.00				
Daily or almost daily 17 (11.6) 129 (88.4) 0.85 (0.42–1.73) 0.664 Visits to social gatherings with ≥10 persons in preceding 14 d 893 (85.1) 1.00 Never 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Once or twice	24 (13.7)	151 (86.3)	1.01 (0.52-1.96)	0.818			
Visits to social gatherings with ≥10 persons in preceding 14 d 69 (14.9) 393 (85.1) 1.00 Never 69 (14.9) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Several times	39 (17.1)	189 (82.9)	1.38 (0.77-2.47)	0.320			
Never 69 (14.9) 393 (85.1) 1.00 Once or twice 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Daily or almost daily	17 (11.6)	129 (88.4)	0.85 (0.42-1.73)	0.664			
Once or twice 22 (10.7) 184 (89.3) 0.69 (0.41–1.18) 0.210 Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Visits to social gatherings with ≥10 persons in preceding 14	· d						
Several times 4 (7.8) 47 (92.2) 0.57 (0.21–1.58) 0.302	Never	69 (14.9)	393 (85.1)					
()	Once or twice	22 (10.7)	184 (89.3)	0.69 (0.41-1.18)	0.210			
Daily or almost daily 3 (37.5) 5 (62.5) 0.89 (0.16⊸∞) 0.667	Several times	4 (7.8)	47 (92.2)	0.57 (0.21-1.58)	0.302			
	Daily or almost daily	3 (37.5)	5 (62.5)	0.89 (0.16–∞)	0.667			

^{*}Calculated as the mean HR of 1,000 separate analyses, where each analysis comprised 610 persons from different households; 1 person was randomly selected from households that had >1 member in the study. HR, hazard rate; CI, confidence interval. †The means of the upper and lower 95% CIs were computed for each variable.

[‡]The mean of the p estimate from the 1,000 iterations was computed for each variable.

Technical Appendix Table 2. Bivariate logistic regression of sociodemographic and individual variables in a cohort of 727 community-dwelling adults, Singapore, 2009*

community-dwelling addits, Singapore, 2009	Seroconverted.	Did not coroconyort		
Characteristic	n = 98	Did not seroconvert, n = 628	OR (95% CI)	p value
Age group, y, no. (%)	11 - 30	11 - 020	OIT (95 / 0 OI)	p value
20–29	21 (16.9)	103 (83.1)	1.00	
30–39	16 (14.2)	97 (85.8)	0.81 (0.40–1.64)	0.557
40–49	42 (16.2)	218 (83.8)	0.94 (0.53–1.68)	0.847
50–59	15 (9.7)	140 (90.3)	0.53 (0.26–1.07)	0.076
≥60	4 (5.3)	71 (94.7)	0.28 (0.09–0.84)	0.073
Sex, no. (%)	+ (0.0)	11 (04.1)	0.20 (0.03-0.04)	0.020
F	52 (12)	380 (88)	1.00	
M	46 (15.6)	249 (84.4)	1.35 (0.88–2.07)	0.169
Ethnicity, no. (%)	40 (10.0)	240 (04.4)	1.00 (0.00 2.01)	0.100
Chinese	6 (6.7)	84 (93.3)	1.00	
Malay	56 (16.9)	275 (83.1)	2.85 (1.19–6.85)	0.019
Indian	34 (11.4)	265 (88.6)	1.80 (0.73–4.43)	0.203
Other	2 (28.6)	5 (71.4)	5.60(0.89–35.16)	0.066
Dwelling type	_ (==:=)	• ()		
≤3-room public housing	21 (11.9)	156 (88.1)	1.00	
4-room public housing	51 (16.5)	259 (83.5)	1.46 (0.85–2.52)	0.172
5-room public housing, private housing	26 (10.8)	214 (89.2)	0.90 (0.49–1.66)	0.742
Smoking, no. (%)	. ()	\/	()	
Current smoker	30 (20.1)	119 (79.9)	1.00	
Nonsmoker, former smoker	68 (11.8)	510 (88.2)	0.53 (0.33-0.85)	0.008
Members in household participating in study, no. (%)		(/	, ,	
1	63 (12.7)	433 (87.3)	1.00	
2	33 (16.9)	162 (83.1)	1.40 (0.89-2.21)	0.150
3	2 (6.1)	31 (93.9)	0.44 (0.10–1.90)	0.273
4	O /	3 (100)	0 (0–∞)	0.980
Self-reported previous influenza vaccination, no. (%)		, ,	- (- /	
No	88 (13.3)	574 (86.7)	1.00	
Yes	10 (15.4)	55 (84.6) [°]	1.19 (0.58-2.41)	0.638
Employment outside the home, no. (%)	` '	` '	, ,	
No	42 (15.2)	235 (84.8)	1.00	
Yes, without anyone at work having symptoms of	39 (11.2)	310 (88.8)	0.70 (0.44-1.12)	0.141
ARI during study period, no. (%)				
Yes, with anyone at work having symptoms of	17 (16.8)	84 (83.2)	1.13 (0.61-2.10)	0.692
ARI during study period				
Baseline antibody titer			0.54 (0.31-0.94)	0.029
Mean	0.082	0.272		
Median	0	0		
No. household members, mean				
0–4 y				
Mean	0.204	0.291	0.77 (0.52–1.15)	0.202
Median	0	0		
Range	0–3	0–3		
5–19 y				
Mean	1.57	1.22	1.22 (1.04–1.43)	0.013
Median	1.0	11		
Range	0–6	0–5		
>19 y				
Mean	3.33	3.1	1.14 (0.98–1.33)	0.096
Median	3	3		
Range	1–8	1–9		
Household contact with ARI symptoms during course of stu		400 (05.0)	4.00	
No	72 (14.4)	428 (85.6)	1.00	0.000
Yes (0)	26 (11.5)	201 (88.5)	0.77 (0.48–1.24)	0.282
Travel out of Singapore during study period, no. (%)	E0 (40 0)	400 (00 0)	4.00	
No Y	50 (10.2)	438 (89.8)	1.00	40.004
Yes (0/)	48 (20.1)	191 (79.9)	2.20 (1.43–3.39)	<0.001
Public transport, no. (%)	06 (40 4)	222 (00.0)	1.00	
Seldom	26 (10.4)	223 (89.6)	1.00	0.005
Frequent	72 (15.1)	406 (84.9)	1.52 (0.94–2.45)	0.085

^{*}Participants who provided at least 1 blood sample in addition to that obtained at baseline. OR, odds ratio; CI, confidence interval; ARI, acute respiratory infection. **Boldface** indicates statistically significant association.

Technical Appendix Table 3. Multivariate logistic regression analysis of factors associated with seroconversion to pandemic (H1N1)

2009 in a cohort of community-dwelling adults, Singapore, 2009* Characteristic Odds ratio (95% confidence interval) p value Age group, y 20-29 1.00 30-39 0.799 1.11 (0.49-2.53) 40-49 1.16 (0.55-2.43) 0.697 50-59 0.63 (0.29-1.40) 0.258 0.081 ≥60 0.34 (0.10-1.14) Sex F 1.00 Μ 1.95 (1.09-3.47) 0.024 Ethnicity 1.00 Chinese Malay 2.41 (0.92-6.32) 0.075 0.126 Indian 2.14 (0.81-5.64) Other 0.058 6.74 (0.93-48.61) Dwelling type ≤3-room public housing 1.00 4-room public housing 0.571 1.19 (0.65-2.21) 5-room public housing, private housing 0.73 (0.37-1.47) 0.382 Smoking Current smoker 1.00 Nonsmoker, former smoker 0.60 (0.33-1.10) 0.101 Self-reported previous influenza vaccination 1.00 Yes 0.646 1.20 (0.55-2.63) Employment outside the home Νo 1.00 Yes, without anyone at work having symptoms of 0.40 (0.22-0.72) 0.002 ARI during study period Yes, with anyone at work having symptoms of 0.90 (0.44 -1.87) 0.784 ARI during study period Baseline antibody titer 0.015 0.50 (0.28-0.87) No. household members, mean 0–4 y 0.70 (0.45-1.10) 0.120 5-19 v 0.096 1.19 (0.97-1.45) 1.20 (0.99-1.44) 0.059 Household contact with ARI symptoms during course of study No 1.00 Yes 0.66 (0.39-1.14) 0.135 Travel out of Singapore during study period 1.00 0.003 Yes 2.04 (1.28-3.25) Public transport Seldom 1.00 Frequent 0.040 1.73 (1.03-2.90)

Hosmer-Lemeshow test for goodness-of-fit 0.491

The multivariate model included all variables listed in the table. ARI, acute respiratory infection. Boldface indicates statistically significant association.